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Title of the paper:

Alternative framings of transnational waste flows:

Reflections based on the Egypt-China PET plastic trade

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Alternative framings of transnational waste flows:

Reflections based on the Egypt-China PET plastic trade

Abstract: Through a discussion of Egypt-China trade in PET plastic, this paper seeks to show how contemporary recycling economies by no means all conform to North-South directionalities, nor to the other assumptions about agency, vulnerability and environmental damage that inhere in the 'neo-colonial geographies of inequality' paradigm. In so doing it seeks to contribute to developing more optimistic and nuanced alternative framings of global waste flows. The paper follows a two part structure in which the first half provides background on the author's research methods, the recycling business in Egypt, and its ties to China (subsection 1) before further outlining the paradigm the paper seeks to nuance, particularly as it has been developed through and applied to e-waste case studies and entrenched in the principal legal instrument governing transboundary waste flows, the *Basel Convention* (subsection 2). The second half of the paper, after some conceptual notes outlining and locating the author's approach to the market in the literature (subsection 3), attempts to provide a few details of the Egypt-China PET market from fieldwork, focusing on two price-shaping/making processes: market fluctuations during the global economic crisis in 2008/09 (subsection 4) and the quality standards criteria applied by Chinese buyers (subsection 5).

Keywords: Egypt; Ethnographic Methods; E-waste; Recycling; Price Making; Zabbaleen

Introduction¹

The Bangladeshi and Indian ship-breaking yards photographed by Ed Burtynsky in his work on global industrial landscapes or the toxic wastes Greenpeace activist Annie Leonard tracked before launching her popular 'Story of Stuff' project (2010) are often framed *in*, and have contributed to the framing *of*, a paradigm that sees waste flows as re-producing historic North-South geographies of inequality, waste 'scalvagers' on the receiving end as exploited and lacking agency, and waste economies as doing little to help the environment. Not all global waste flows can or should be thought of this way, however. For example the cardboard, plastics and scrap metal trade with China (often brokered through Middle Eastern countries) explored by Adam Minter in *Junkyard Planet* (2013)—to cite only one recent, and more popular, work—does not so readily lend itself to indignant denunciation.

Eschewing sensational and politicized cases in order to explore the more mundane trade in recycled PET plastic between Egypt and China, this paper aims to contribute to developing a subtler and more—but not entirely—optimistic narrative and lexicon than those offered by the 'neo-colonial geographies of inequality' account. This example and the alternative framing it invites are relevant in the context of a collection of articles on e-waste for several reasons. First, given that within the family of transnational waste flows the range of material streams and ways of thinking about them vary significantly, those of us writing about a specific genus or species (be it e-waste, or something else) must decide which other examples provide the most appropriate repertoire of analyses for explaining and clarifying our chosen case study. I believe one learns at least as much by conceiving of the e-waste economy as analogous to that of PET plastic (and thus thinking of it in terms of transnational economic networks and dynamics), as by analogizing it to the examples given above. The persuasiveness of that analogy does not rest

¹ The author wishes to express his deep gratitude to Karine Bennafla, two anonymous reviewers, Peter Kirby and the participants in the Oxford seminar where the first draft was presented, especially Josh Lepawsky, for their thoughtful critiques and suggestions. Special thanks to Peter and Anna Lora-Wainwright for their patience!

primarily on a materiality argument even though electronic components are frequently housed in plastic casings and e-waste is therefore not made up exclusively of the rare earth, precious and semi-precious metals most associated with it. Rather, the analogy rests more on the way both flows involve excluded or rejected objects being re-absorbed by market dynamics into the same system of global consumer capitalism that first produced and spat them out.

The Egyptian recycling economy

Over the past seven years (but especially between 2008 and 2010), I have been conducting ethnographic fieldwork in Cairo on waste-related themes. Cairo has a highly sophisticated system of endogenous 'informal' waste recyclers (Zabbaleen) who are not primarily scavengers but collect along defined, often hereditary routes, removing all waste, valuable or not. Their economy is based not on fees but recycling and, until H1N1 influenza led to a bizarre presidential decree ordering the cull of the entire herd, pig-raising. The general features of the system, in particular certain interesting and relevant aspects of its social organization, have been well described in the abundant and longstanding literature attracted by this fascinating livelihood group (e.g. Haynes and El-Hakim 1979; Meyer 1987; Assaad 1996), and will not be reiterated here.

Given a significant amount of interest in the Zabbaleen over the past forty years on the part of NGOs, development institutions (the World Bank) and foundations (Ford, Oxfam), religious actors, and the state, my main focus has been on their case as an example of the evolution of technologies, projects and philosophies of development and social change since the 1970s (Furniss 2012). The recycling economy, not part of this project as originally conceived, imposed itself on me during the 2008 economic crisis, when the Zabbaleen were a sort of canary in the coalmine of the national economy: among the first to be affected by collapsing oil prices, which translated into decreasing plastics prices worldwide, their vulnerability and sensitivity to global economic shocks ruffled boilerplate assumptions about their marginality. The extreme

importance placed on the economic crisis by Zabbaleen informants obliged me to follow up the theme of the transnational/global dimension of the waste trade at the time, and ultimately to continue collecting data on the theme post-2008/09.

I was initially surprised to discover that these 'marginal' actors of the 'informal' economy communicate regularly by fax and internet with Chinese buyers, know the fluctuations of plastic prices (in US dollars) in Shanghai, complain about export tariffs on recycled plastic imposed by Egyptian customs authorities, and have business partners who speak fluent Chinese. The workings of these business relationships—presented in somewhat more detail in subsections 4 and 5 below—seemed to complicate, even contradict, a familiar paradigm in scholarship, NGO discourse, and legal instruments on global waste flows, which emphasizes 'neocolonial geographies of inequality.'

The Neo-colonial geographies of inequality paradigm

E-waste has been an important example in the elaboration of the 'neo-colonial geographies of inequality' paradigm for understanding and critiquing transboundary waste flows. The West African (e.g. Nnorom and Osibanjo 2007; Schmidt 2006) and Chinese (e.g. Tong and Wang 2012) cases are most often cited, though there also exist studies on the 'dumping of e-waste from developed countries' into other regions, such as South Asia (e.g. Mundada and Shekdar 2004). There are, of course, important differences between these cases, for example some focus on repair and reuse (such as in Nigeria, where un-repairable items are dumped), others on burning and leaching to extract raw materials (more commonly found in descriptions of Ghana or China).

Conceiving of international waste flows as having 'North-South'/'developed-developing' directionalities, the narratives of environmental injustice that emerge from many of these studies tend to emphasize negative human and environmental impacts. According to this view, multiple

historic inequalities and injustices are reproduced as rich and powerful countries ship unwanted vestiges of their material lives to poor and powerless ones. Western consumerism's disposal costs are, as is often the case with extraction and production as well, borne by distant strangers, in this case the 'scalvagers'—to use the evocative neologism proposed by this collection's editors—who disassemble products the 'benefits' of which they do not, and may never, enjoy in the first place. One of the ironies sometimes underscored is that secondhand electronic equipment shipped to developing countries may be passed off as an attempt to 'bridge the digital divide.' By relabeling their old junk development assistance, the rich not only solve their waste problem at the expense of the poor, they actually try to pass this off as charity.

The *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* is in large part premised on this kind of critique. The Convention's 'Ban Amendment,' for instance, rests on an idealized and dichotomous geography that, like other such shorthands—First/Third World, Colony/Metropole, North/South, Centre/Periphery, Developed/Developing—divides the world into two blocks, one poor the other rich, one exploited the other exploitative. If the Amendment one day receives sufficient ratifications to enter into force, it will prohibit any Annex VII (the 34 OECD and 28 EU countries, plus Liechtenstein) country from shipping hazardous waste to any non-Annex VII ('the rest') country for final disposal, reuse, recycling or recovery.

These interpretations, like *Basel Convention* as a legal instrument, have significant merits, particularly for the way they promise to address the 'out of sight, out of mind' problem. They usefully extend David Harvey's (1990) call—to study the links between consumers and the invisible actors who lie upstream—in the other direction, revealing the 'shadow' (Dauvergne 2008) Western consumption casts when the value chain is followed downstream.

However, this form of self-criticism (at times, hang-wringing and self-flagellation) risks also being surreptitiously deprecating. Like approaches that portray the poor as 'passive' or

merely 'surviving' (see Bayat 2010, 47-49) this view may, despite being sympathetically motivated, ignore or deny agency on the part of waste scavengers, while simultaneously (and paradoxically) blaming them, or at least their governments. For instance, with respect to e-waste flows to China in particular, NGO reports like *Exporting Harm: The High-Tech Trashing of Asia* have attracted attention to workers' conditions, but also promote the view that waste scavengers in the developing world are powerless victims and their work does little to protect—and may even harm—the environment.

But it can also be argued that the logic of household recycling in the West, in which individual 'citizen-consumers' are cast as the principal agents responsible for change, has confined our efforts to an artisanal scale and forestalled coordinated action, particularly on the part of producers/manufacturers (MacBride 2012). So the geographies of responsibility and blame are complex, and the alternatives to global recycling economies—both on the extraction ('conflict minerals' from countries like the DRC) and reuse (a failed Western 'recycling' discourse) ends of the value chain—are not obviously superior.

Some excellent recent work on global waste trades and flows recognizes this and seeks to complicate the account. To cite only one prominent example of this scholarship, the introduction to the book *Recycling Economies* (Alexander and Reno 2012) and many of the individual contributions to it underscore how local recycling work at various nodes along global chains may be not only degrading and problematic, but also innovative and highly productive.

Examples like Egypt-China make clear that historic 'North-South' inequalities are also being reconfigured—sometimes even inverted—in the new recycling economy. The economists (Broadman 2007; Simpfordorfer 2009), sociologists/anthropologists (Bertoncello and Bredeloup 2009), and geographers (Pliez 2007; Pliez 2010) who contend that there is currently a renewal of ancient China-Middle East trade tend to focus on flows *from* China to the Middle East. Although the flow considered here is in the opposite direction, it contributes to rather than contradicts this

scholarship on new trade directionalities.

So what seems relevant about a case like the Egypt-China PET trade is not so much that it escapes regulation under the Basel Convention's *legal* framework (because it is not hazardous and because the amendment is not yet in force), even though that serves as an important reminder that the document governs a limited subset of cases. The more important point concerns how the example thwarts the document's *conceptual* framework, according to which waste flows are primarily from rich/north/developed to poor/south/developing countries, the recipient actors lack agency and are exploited (requiring international legal instruments to ensure their protection), and the environmental and health effects of the trade are primarily negative.

Alternative approaches to recycling economies

Many waste economies, not just the PET plastic trade, may be regarded simply as examples of the diversification and intensification of contemporary transnational commercial flows writ large. This allows for situating them in a broader field of geographic approaches to transnational economic networks and dynamics, often regarded as vectors for spatial and territorial recompositions (e.g. Bennafla 2002; Lombard and Bredeloup 2008; Choplin and Lombard 2008). This provides a very different understanding of transboundary waste flows, as a process by which objects excluded or rejected by consumer capitalism, or indeed as part of it (its byproducts), are later re-absorbed by that same system.

From that starting point, my approach to the study of the PET plastic trade draws on work by Caliskan (2010) and Guyer (1995; 2004) in order to adopt an anthropological approach to value determination. This consists of treating markets and prices as ethnographic rather than theoretical questions that need to be worked out in the field rather than (or at least in addition to) on the blackboard, as derived not from the 'a priori logic of calculation' or 'the geographical coming together of the two lines of supply and demand' but things like power contests (Caliskan 2010, 19).

One aspect of recycling economies that makes them an interesting case within this emergent field of the social rather than economic study of markets is that most people not involved in the trade regard its 'commodities' as worthless. This extends or at least reiterates the insight of the *Social Life of Things* (Appadurai 1988), emphasizing every object's potential for commodification, every commodity's potential transformation into waste, and every piece of waste's potential for re-absorption by/into the market. But if it is true that commodities must be not only materially but also *culturally* produced as exchangeable goods, on terms of trade that are themselves also socially constructed, the point made below is that the social construction of value does not make prices totally malleable or completely artificial, nor does it place them entirely within the control of the agents of trade.

Purchase and sale prices are determined in this trade by a variety of convergent factors, some global, others local, some social, others material. This is evident in two price-shaping processes, each examined in more detail below: market fluctuations during the global economic crisis in 2008/09, and the quality standards criteria applied by Chinese buyers. In both cases the Zabbaleen encounter price as relatively passive agents. Thus, if one wishes to think in terms of power gradients, this case not only escapes the standard 'reproduction of historic North-South inequalities' account because of its 'South-South' character, it also reverses the standard account's assumption that the 'recipient' or importing party, rather than the 'sender' or exporting party, is most vulnerable. More fundamentally—and in a manner that deserves to be explored in more depth than this paper is able to do—the sender/recipient dichotomy is an oversimplification of a complex chain of actors, each with specific social, economic, and technical constraints. Ranging from ambulant scavengers to collectors with mechanized vehicles via various middlemen involved in sorting, chipping, washing, etc, there are many different shades of power and vulnerability.

Price fluctuations during the 2008 economic crisis

The waste pickers of Rio de Janeiro's Jardim Gramacho (Millar 2012) or the homeless men who survive collecting discarded beverage cans in Japan (Wickens 2013) might seem far from subprime mortgage lending in the US. Yet as the authors just mentioned relate, the financial crisis of 2008 had important knock-on effects for the informal sector waste collectors and recyclers in each of these settings—as it did for the Zabbaleen.

The data presented below cover price fluctuations of paper/cardboard, rags, and several different plastics in Cairo. It was collected through interviews with Zabbaleen traders in 2008/09. They were asked to estimate the price just 'before' the crisis, and the current price at the time of the interview. One trader only was interviewed per material, so the figures should be regarded as indicative of orders of magnitude and change rather than precise estimates of average market prices at the time. Although the plastics interviews were conducted in December, rags in January, and paper in February, prices remained relatively stable over the period.

Table I.

Table II.

Table III.

The drop in each material's price varied considerably. The rags trader observed a 25% drop in price. 'Mixed' paper dropped by 50% while that trader continued selling newspaper for the same price as before the crisis. The most precipitous drops were in plastics prices. The seller of what is referred to in Zabbaleen trade argot as *bagh* (Medium-density polyethylene or MDPE) provided three sets of figures, which he felt illustrated the market conditions at that time. The

sorted and chipped prices represent what he paid to acquire material, which he pelletized with an extruder before selling to factories in Egypt for manufacturing. The difference between those prices and the sale price for pelletized material represents his margin. Thus, his suppliers experienced a 50% drop in their prices, whereas he experienced a drop of only one third. However his problem, he explained, was not just price but demand. *When* he was able to sell, he could do so at 4,000 LE. But there was almost no demand even at that reduced price. He explained this through reference to the prices for new, imported material. At an equal price, manufacturers prefer new over recycled since it is of superior quality. The choice between new and recycled is not merely a matter of price, therefore, but of balancing price gain against quality loss. When new cost 12,000 LE per ton at the height of the pre-crisis boom, the half price (6,000 LE) recycled material attracted many manufacturers. However after the crisis, with new selling for 5,200 LE and recycled for 4,000 LE, only a minority, for whom cost cutting was preeminent, continued buying recycled.

The data concerning PET plastic is of greatest interest for present purposes since that is the material sold predominantly to China/Chinese buyers. At the time of the financial crisis this business essentially ground to a halt. As Table III shows, the price for which a trader could sell chipped and washed PET dropped essentially to nil. This created a business opportunity for the interviewee. Because PET was essentially not selling outside the Zabbaleen neighbourhoods, it could be bought very cheaply within them. Confident that the price would bounce back, the interviewed trader sought to buy as much plastic as he could at the depressed price then sell it once the price had recovered. Despite challenges related to limited capital and storage space, he was able to partially execute this strategy and the profits later enabled him to buy a flat outside the stigmatized recyclers' quarter (a demand of his new bride) and expand his warehouse.

A number of factors may explain the price fluctuations. The most obvious is the cost of virgin material. Plastic is a petroleum product and in the lead-up to the crisis crude oil had

reached an all-time high of \$US 145/barrel (July 3, 2008), whereas by the end of 2008 the price was as low as \$US 37/barrel. However, if oil prices were the only factor the difference in the fluctuation of PET and MDPE would be difficult to explain. One important differentiating factor that may account for why the former business ground to a halt while the latter continued (albeit at reduced prices and volume) is the transnational character of the PET trade. At that time, and still today, Egyptian authorities imposed significant customs levies on waste plastic exports. As reported in the June 10, 2008 edition of *Al-Ahram* (Arabic), just a few months before the economic crisis the 'Plastic Industry Branch' issued a memo to the Minister of Commerce and Industry requesting the increase of export fees on plastic wastes from 1,000 LE to 1,500 LE/ton. Manageable prior to the economic crisis when the price of the material was high, these tariffs became prohibitive once the price fluctuated downward. The tariffs were later decreased, but this governmental action lagged significantly behind the market's rapid evolution.

Quality standards and price-making

In 2013 I again interviewed the same two plastics traders. The MDPE seller indicated that, in 2013, there were to his knowledge two Chinese-owned factories in Egypt buying plastic from the Zabbaleen. If the product ultimately manufactured in China is shipped back to Egypt, there is a strong incentive simply to produce it *in situ*. However, as in 2008/09, he affirmed that he did not deal with them, though some of his relatives remarked on the presence of Chinese traders from time to time in the Zabbaleen neighbourhoods.

The PET trader specializes in coloured plastic, an unfilled niche that allowed him to get his start in the business in his early-to-mid twenties. Currently in his early thirties, he now also deals in clear PET. In each of the two trades he has a 50% partner. For clear plastic, his partner contributed capital (to purchase) and a workspace (to house) a mechanical washing device. For coloured plastic, the business partner's role is communications with China and export issues such

as tariffs. The coloured plastic is washed by hand in large vats in the trader's family home, resulting in it being less free of contamination than the mechanically washed clear PET.

Both types of PET material are sold to Chinese buyers. The clear plastic is sold to a Chinese-run factory in Egypt, whereas the coloured PET bottles are generally exported from the port of Damietta to Shanghai. The primary reason for these different trade circuits concern quality requirements. Chinese buyers in Shanghai have higher demands with respect to the quality of clear plastic than coloured. The trader sent one shipment of clear to Shanghai some years ago but when it arrived he was informed that the quality was inadequate. The buyers paid, but refused to take future shipments of clear material, indicating that thereafter they would accept only coloured.

The factory in Egypt also has stringent requirements for clear PET, which is why that material is washed mechanically rather than by hand, but they remain less stringent than those applied in Shanghai. Based on criteria of cleanliness, purity (lowest possible percentage of other plastics), and moistness, the buyer ranks material on a scale consisting of the grades A, B++, B+, B, and C. In April 2013 the lowest quality, C, commanded a price of 3,700 LE per ton, whereas the highest quality, A, commanded a price of 4,600 LE per ton. The criteria for establishing this ranking are worth briefly describing. Since the material is sold by weight, moistness compensates the buyer when he believes he is paying for a certain amount of water rather than plastic. For this the buyer makes the moistness and cleanliness determinations after physically touching and examining the material. Since material can always be further dried or re-washed, but re-sorting is impossible after the material has been chipped, the key criterion is 'purity': the absence of other plastics, above all PVC. The buyer performs a simple test by microwaving a sample. Since PVC burns at a lower temperature (hence the problem of mixing it with PET during extrusion), its presence is signaled by scorched flakes.

In sum the buyer dictates the price on the basis of a quality determination, which he

himself makes, according to criteria he sets (derived from requirements of the manufacturing process). The only real opportunity for a Zabbaleen seller to have an impact on the price is by improving his sorting, washing and drying processes. These processes are sites of struggle not only between the Zabbaleen and the Chinese, but also among Zabbaleen. Because plastic bottles sorted according to colour and compressed into bales are worth more per ton than unsorted bottles, chipped material more than baled, chipped and washed more still, control of such value-added processing determines one's margins and, of particular importance from the Chinese perspective, gives one control over factors like purity.

Although *a priori* conceptions of the market normally regard choice as axiomatic, the PET seller had several reasons for explaining why he felt compelled to sell to the Chinese buyers. First, 700-800 parts per million of PVC is sufficient for the Chinese manufacturers in Egypt, whereas European buyers, the seller explained, will typically not accept higher than 100. Meeting that requirement requires hiring additional employees at the sorting stage, so although a ton of PET sold to the European market is worth approximately € 100 more, there is little trade between Egypt and Europe because the higher price is outweighed by the increased costs. The second reason the seller did not trade with European buyers was higher shipping costs. Because there are massive imports of Chinese manufactured goods into Egypt, but few Egypt-China exports in reverse, container space returning to China is very low cost. It is cheaper, the trader claimed, for him to send a container from Egypt to China than from Egypt to Greece, although the former voyage takes as many weeks as the latter does days. In an economic rather than kilometric geography of contemporary global maritime transport, Egypt has thus become closer to China than to Greece, contradicting the historically shaped notion of a Mediterranean space. When asked why he did not threaten the buyer with selling his material elsewhere in order to strengthen his bargaining position, the trader laughed and said that he had attempted to do so, but that his bluff had been called: 'The problem with the Chinese,' he said, 'is that they know too well what is going on in the industry. When I said I would go sell my plastic to so-and-so, the

Chinese said to me: "ah, but he doesn't have cash. So he offers you a higher price but he can't pay on the spot." They give me money immediately.'

Conclusion

Against the reification of e-waste into a *sui generis* category in a manner that disengages it from other waste flows, or its contextualization exclusively relative to cases lending themselves to the neo-colonial geographies of inequality interpretation, this paper has suggested that it is also 'good to think' e-waste in the context of more mundane waste flows also, such as PET plastic. This argument is based on the shared feature of re-absorption of waste objects by economic dynamics.

However, value regimes are diverse and contested even within the overarching system that can be glossed as 'the market,' as an empirical, ethnographic approach to this trade reveals. An unevenness of power clearly exists between Egyptian sellers and Chinese buyers (and between many sub-categories of actors not discussed here, like waste scavengers and other Zabbaleen middlemen), but it is less radical than the one implied in the logic of a document like the *Basel Convention*, and the respective vulnerabilities of importer and exporter may be opposite those assumed.

The Egypt-China PET trade thus emphasizes how contemporary recycling economies by no means all conform to North-South directionalities, nor to the other assumptions about agency, vulnerability and environmental damage that inhere in what is arguably the dominant paradigm for analyzing transboundary waste flows.

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Tables

Material	Sale price, LE/Ton	
	"Before" (~Sept 2008)	"After" (Feb 2009)
<i>Khaleet</i>	400	200
<i>Gurnal</i>	50	50

Table I. Price fluctuations of paper. *Khaleet* = 'mixed' paper; *Gurnal* = sorted newspaper.

Material	Sale price, LE/Ton	
	"Before" (~Sept 2008)	"After" (Jan 2009)
<i>Cobna</i>	1,200	900

Table II. Price fluctuations of rags (*Cobna*).

Material	Source	Sale price, LE/Ton	
		"Before" (~Sept 2008)	"After" (Dec 2008)
PET	Zabbaleen (recycled)	2,500	0 or 100
<i>bagh</i> (sorted and chipped)	Zabbaleen (recycled)	3,000	1,500
<i>bagh</i> (pelletized)	Zabbaleen (recycled)	6,000	4,000
	Imported (new)	12,000	5,200

Table III. Price fluctuations of plastic. PET = Polyethylene Terephthalate; *Bagh* = Medium-density polyethylene (MDPE).